US Army Corps of Engineers®
North Pacific Division

Salmon Passage Notes

Snake and Columbia River Fish Programs April 1995

New Plans for Salmon:

Biological Opinions on System Operations Released

Calling it a good day for salmon in the Snake River, the National Marine Fisheries Service (NMFS) announced its Biological Opinion of the effects on salmon listed under the Endangered Species Act, from proposed Federal Columbia River Power System operations. Will Stelle, NMFS Regional Director in Seattle, outlined the measures in the Biological Opinion at press conferences held March 1 in Boise and Seattle.

The US Fish and Wildlife Service (USFWS) at the same time announced its Biological Opinion of effects of the system operation on Kootenai River white sturgeon listed under the Endangered Species Act.

The Biological Opinions find that the Corps' proposed hydropower system operation outlined in its December 15, 1994 Biological Assessment would jeopardize the continued existence of the listed species. NMFS and USFWS therefore recommend "reasonable and prudent alternatives" for operation of the dams, to avoid jeopardy.

The NMFS Biological Opinion for 1995 and future years also responds to a federal court judgment which set aside the 1993 Opinion and Corps Record of Decision on proposed operation of the power system.

On March 10 Major General Ernest J. Harrell of the Corps of Engineers North Pacific Division signed a new Record of Decision documenting the Corps' intent to fulfill the recommended measures in the Biological Opinions in an expeditious and responsive manner.

In its Record of Decision, the Corps relies upon the NMFS professional scientific determination that the measures in the Biological Opinion together with NMFS salmon Recovery Plan, will provide the necessary actions to halt and reverse declines of listed Snake River salmon species. [The Proposed Recovery Plan is currently out for regional review—see box on page 4.]

Fast-Track Plan

A major strength of the new NMFS Biological Opinion for salmon lies in its plan to orchestrate fish survival research and dam configuration studies over the next three to four years to, in the language of the Biological Opinion, "reduce the uncertainty about the likely benefits of, need for and feasibility of major system structural modifications." The long-term focus of the Opinion is on alternatives for reconfiguring the dams or improving existing fish facilities to improve fish survival.

Accelerated Corps studies of reservoir drawdown, further improvements to the existing juvenile bypass and transport systems at the dams, and a new technology for surface-oriented juvenile fish bypass, will provide needed information for regional decision-making.

The plan in the Biological Opinion also overlays a process for advanced engineering and design work to proceed on the various dam configuration options as well as environmental analysis requirements under the National Environmental Policy Act (NEPA).

By mid-1996 the Corps is to complete an interim evaluation report on lower Snake River reservoir drawdowns to spillway crest and natural river levels, as well as surface-oriented bypass systems. At that time the region will have sufficient information to make some decisions about which options warrant further consideration and for which options advanced planning and design can begin. NEPA compliance processes would be well underway, avoiding delays in the ability to implement chosen options.

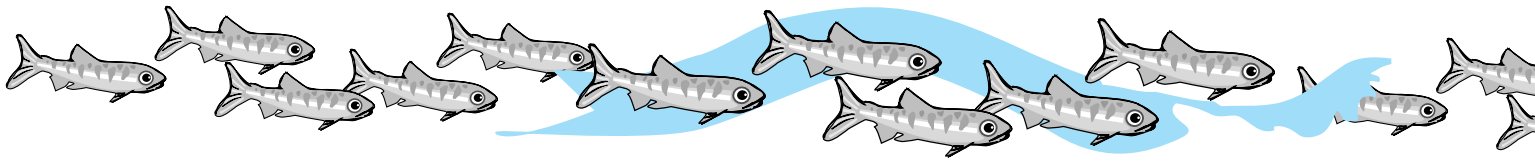
At the same time, intensive research continues to obtain better information on fish survival through various migration paths. Research includes evaluation of in-river juvenile fish migration versus transport of juveniles in barges and trucks under the Juvenile Fish Transportation Program. The NMFS study of juvenile fish survival and travel time through the reservoirs using PIT-tagged fish will continue. Analysis continues of survival of juveniles through various dam passage routes, such as turbine passage, passage through bypass channels and spillway passage.

These studies and research will be coming together within the next four years. By then, plans should be "on the shelf" to allow implementation of the chosen options to begin without delay by the year 2000.

NMFS and the Corps will also be developing an implementation schedule for study of John Day spillway crest level drawdown that integrates other efforts such as surface collector study.

SCS Still the Study Vehicle

To meet these new schedules, the Corps is accelerating its System Configuration Study (SCS), a study of alternative physical modifications that can be made to dams to improve salmon migration. Lower Snake River reservoir drawdowns to spillway crest level



(probably 40 to 43 feet below minimum operating pools) and natural river level (over 100 feet below MOP) are included. The idea behind drawdown is to lower the reservoir behind the dam, decreasing the cross sectional size of the reservoir and increasing the velocity of the river.

Evaluation of a relatively new technology for bypassing juvenile salmon, the surface-oriented bypass, will also intensify. With this system, juvenile fish might be more efficiently bypassed over the dams, avoiding a detour down to the turbine intake and through the existing screened juvenile bypass systems. The Corps will be conducting tests at Ice Harbor and The Dalles Dams this year, with prototypes scheduled to be installed at The Dalles and Lower Granite in 1996. (Please see article in November 1994 *Salmon Passage Notes*.)

Near-term Measures

While long-term plans progress, the Biological Opinion calls for intensified immediate and near-term efforts to improve in-river conditions.

"Salmon flow" objectives in the Columbia and Snake Rivers to help juvenile salmon migrate faster will require approximately 13 to 16 million acre-feet of water to be released during the migration seasons, exceeding the ten million or so acre-feet provided in recent years.

The Opinion calls for a summer floor of 1520 feet elevation at Dworshak Reservoir—80 feet below full. As happened last year, recreational facilities will be impacted, with a number of boat ramps unusable, and water supplies for camp sites affected. However, a new boat ramp at Dent Acres is now in service that will be able to accommodate the lower levels, and another is planned at Freeman Creek for the 1996 recreation season. A new marina will be installed at Big Eddy this May to replace the one destroyed by wind three years ago—it will be serviceable throughout the reservoir's range of operation.

Spill for juvenile salmon at all eight of the Corps' lower Columbia and Snake River projects is anticipated. Under the spill measures, more water and fish are diverted away from turbines and over the spillways.

A consideration when spilling will be dissolved gas supersaturation standards. An undesirable side effect of high spill is the entrainment of nitrogen gas when the water plunges deep into the spillway basins. High concentrations of gas in the water can result in "gas bubble trauma" where air bubbles form in the circulatory systems of salmon and resident fish. There are standards for acceptable percentages of gas supersaturation that may affect the level of spill.

Any spill at the projects will result in fewer fish collected for truck or barge transport. Four of the eight projects—Lower Granite, Little Goose, Lower Monumental and McNary—have facilities for collecting and transporting juvenile fish. At three of these, spill for fish is requested only when average flows meet or exceed the salmon flow target levels of 85 thousand feet per second (kcfs) in the Snake and 220 kcfs in the Columbia. Lower Granite will spill only when Snake River flows exceed 100 kcfs.

All juvenile fish collected at these projects will be transported, except that at McNary Dam spring and summer chinook will be bypassed back into the river due to uncertainties regarding the benefit of transporting "yearlings" from that site.

NMFS acknowledges overall concerns with the Juvenile Fish Transportation Program expressed by state and tribal agencies and others in the region, as well as decreased emphasis on transport in the Northwest Power Planning Council's Strategy for Salmon. The agency also recognizes that other regional experts support juvenile fish transportation. According to the Biological Opinion, after considering the available information NMFS concluded that transportation is

ESA and Biological Opinions

The need for a Biological Opinion for salmon and other species stems from their listing under the Endangered Species Act. A Biological Opinion is issued following consultations between the listing agency and federal agencies whose actions could affect the species. If the Biological Opinion finds that proposed agency actions would jeopardize the continued existence of the listed species, recommended measures to avoid jeopardy—the reasonable and prudent alternatives—are proffered.

Effective in December 1991 NMFS listed the Snake River sockeye salmon as endangered under the Endangered Species Act. In May 1992, Snake River spring/summer chinook and fall chinook salmon species were listed as threatened. Due to dwindling numbers of fish the chinook species' status was changed to endangered in an August 1994 emergency action. Snake River salmon must negotiate as many as eight dams and reservoirs on the lower Columbia and Snake River as juveniles migrating from upstream rearing areas to the ocean, and again as adults returning to their natal waters to spawn.

On September 6, 1994, the USFWS listed the Kootenai River white sturgeon as endangered. The river flows and volume of water considered necessary for successful sturgeon spawning have been affected by development of the Kootenai River basin. Operation of Libby Dam for flood control and hydropower has reduced river flows during the May to July spawning season.

IDFG V. NMFS

The NMFS Biological Opinion and operating agencies' records of decision for 1995 and future years bring to a close post-judgment discussions in Idaho Department of Fish and Game v. National Marine Fisheries Service (IDFG v. NMFS). The documents reflect many hours of meetings, discussion, task group work and deliberative consideration of state, tribal and interest group concerns and desires.

The discussions followed a March 1994 decision in the Oregon District Court that found fault with the federal process for the Biological Opinion on the 1993 planned operation of the power system. Judge Malcolm Marsh said that the process for determining the operating agencies' effectiveness in efforts for listed salmon was too geared towards the status quo, with minor adjustments to a system that cried out for a "major overhaul." The plaintiffs and defendants agreed to work together to address the Judge's findings in the context of the 1994-98 Biological Opinion, since the 1993 season was already over.

On March 23, 1995, the federal defendants submitted to Judge Marsh, documentation of information exchanged and discussions completed in the process. The NMFS Biological Opinion and records of decision from the federal agencies responsible for operation of the hydrosystem—the Corps of Engineers and Bureau of Reclamation—were also submitted.

likely to benefit listed stocks and should continue to be an interim means to mitigate adverse impacts of the hydrosystem operation.

To increase water velocity for migrating juvenile fish, the four lower Snake River projects will be operated at or near their minimum operating pool levels, and the John Day Dam on the Columbia River near minimum irrigation pool.

A Technical Management Team with members from the Corps, Bonneville Power Administration, the Bureau of Reclamation, NMFS and USFWS, will monitor and recommend adjustments to project operations during migration seasons so that water and fish conditions will be taken into account. That team has begun weekly meetings which will continue through the migration seasons.

The initial meeting was held April 5. Representatives from the five agencies discussed operations at the hydro projects from the week before and planned operations for the following week. Water supply and streamflow forecasts and counts of migrating juvenile fish were reported. Also attending were representatives of the Fish Passage Center and other interested parties.

The Technical Management Team will meet every Wednesday in Portland. Members of the public are invited to attend and to provide pertinent information. For information call Russ George at the Corps of Engineers in Portland at 503-326-3745.

John Day Reservoir Operation

The NMFS Opinion calls for operation of the John Day Dam on the lower Columbia River at its minimum operating pool (MOP) level, or elevation 257 feet, beginning in 1996 as an important component in the mix of measures to counteract the river-slowing effects of reservoirs created behind the dams. The reservoir would be held at or near MOP year-round, to provide stable conditions to decrease bank erosion and allow new fish and wildlife habitat to establish.

Although MOP level at John Day is just five to eight feet below the level at which the reservoir is normally operated, it causes impacts to irrigators, municipal water users, recreation sites, fish and wildlife habitat and other uses that have come to rely on operation at a higher level. The Umatilla Wildlife Refuge, established as part of the fish and wildlife mitigation for the John Day Dam, would be adversely affected. Over twenty irrigation pumping stations would require modification.

John Day Dam on the Columbia River: Flow, spill, transport and other measures in NMFS Biological Opinion aim to lessen effects of dams and reservoirs on juvenile salmon migration.

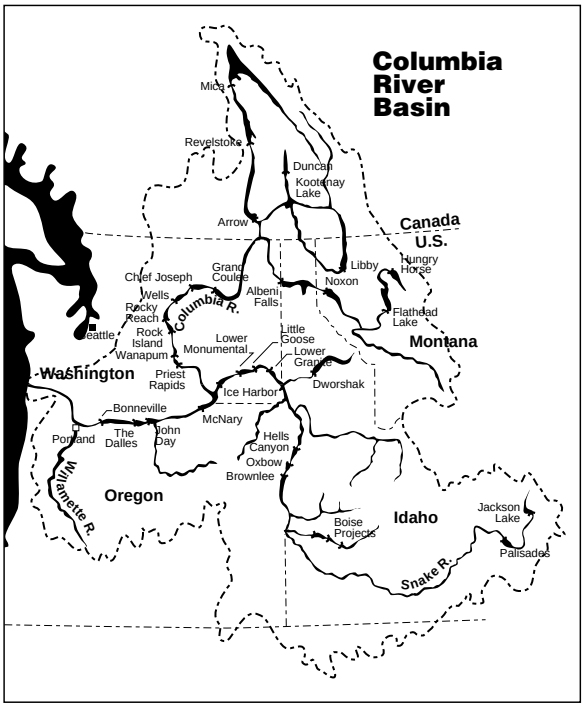
Before the John Day drawdown to MOP can be implemented changes will have to be made to public and private facilities to allow operation under the lower river levels. Fish and wildlife impacts will also require mitigation. The Corps will make every effort to complete the necessary modifications and mitigation as quickly as possible, but expects that completion will go beyond 1996.

Libby Dam Operation to Help Sturgeon and Salmon

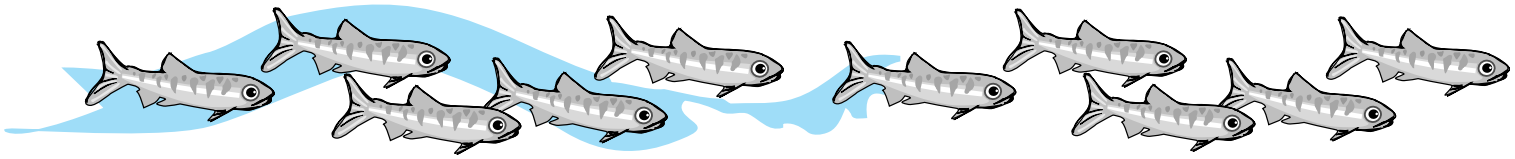
The USFWS Biological Opinion contains a recommendation for operating Libby Dam, on the Kootenai River in Montana, to avoid jeopardy to listed sturgeon. The USFWS recommends that Libby operate with full powerhouse releases for a period of up to 42 days, and spill to the maximum extent possible without exceeding Montana's 110 percent total dissolved gas standard.

However, there are concerns about possible downstream damages from flooding and bank erosion with full powerhouse operation, as well as the inability to spill at Libby without exceeding the 110 percent Montana standard for dissolved gas. These concerns will require flexibility in implementing the recommended operation. The Corps will monitor conditions and make changes as needed.

Because further biological information on the sturgeon and effects of the recommended changes on sturgeon populations is needed, the Corps and USFWS will use an adaptive management



Regional efforts for salmon extend throughout the Columbia River basin, and include the four "Hs": Habitat, Hatcheries, Hydropower, and Harvest.



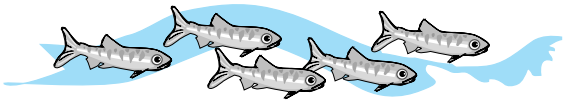
approach through in-season monitoring and changes to policies as more information becomes available.

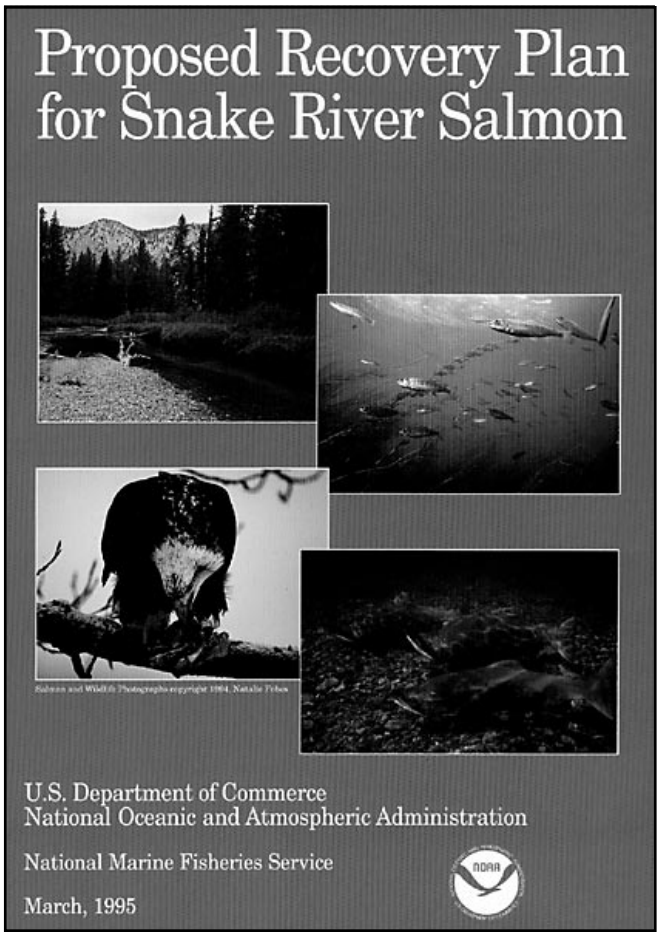
Operation for sturgeon may reduce summer lake elevations. In addition, the NMFS Biological Opinion calls for summer lake elevations as low as 20 feet from full, to meet flow objectives for salmon. At the lower summer elevations, recreational facilities will be impacted—three marinas would have limited access, and swimming beaches and boat ramps would be affected.

On March 20, the National Marine Fisheries Service announced its draft Recovery Plan to guide federal agencies in actions to protect and restore endangered stocks of Snake River salmon. The Recovery Plan is available for public review and NMFS will be holding hearings in the region on the plan.

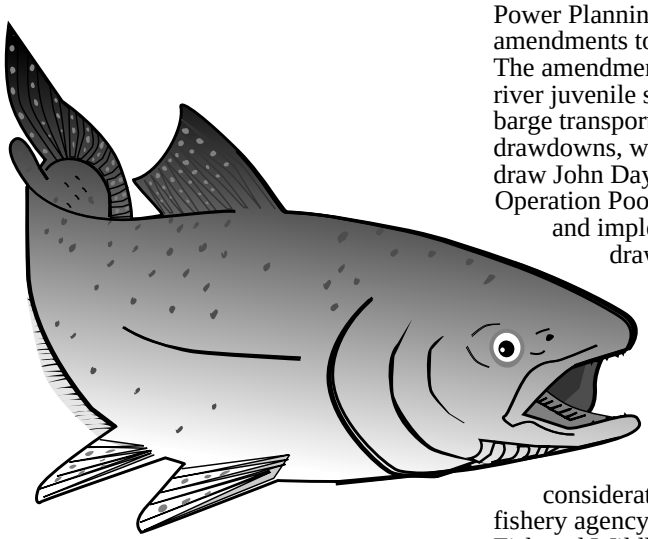
The recovery plan addresses harvest, hatcheries, hydropower and habitat issues, placing emphasis on enhancing in-river conditions, better protection of spawning and rearing habitat, and improved management of harvest and hatcheries. On hydropower issues, the plan reflects measures in the March 1995 NMFS Biological Opinion.

For further information contact Rob Jones, Recovery Plan Coordinator, NMFS, 525 NE Oregon St, Suite 500, Portland, OR 97232, 503-230-5429.





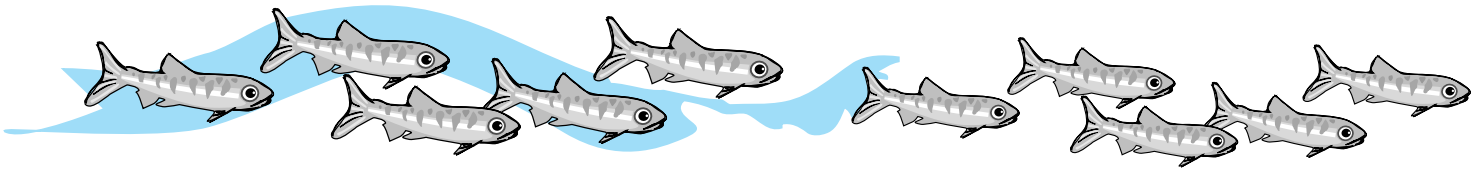
Power Planning Council Amends Salmon Strategy



In December 1994, the Northwest Power Planning Council adopted amendments to its Strategy for Salmon. The amendments stress emphasis on in-river juvenile salmon migration over barge transport. They call for reservoir drawdowns, with immediate action to draw John Day Reservoir to Minimum Operation Pool level (elevation 257 feet) and implement spillway crest drawdown at Lower Granite Dam.

In proposing amendments to the Strategy for Salmon, the Council was responding to a Ninth Circuit Court decision requiring greater consideration of state and Tribal fishery agency recommendations in its Fish and Wildlife plan.

Many of the measures in the NMFS Biological Opinion for salmon reflect the Council's amendments. The federal agencies will continue to coordinate with the Council on planning and implementation of actions for salmon. Where there are conflicts between measures in the Council plan and those in NMFS Biological Opinion, the Endangered Species Act requirements take precedence. For example, there will be no immediate Lower Granite Reservoir drawdown because regional studies and research called for in the NMFS Opinion on lower Snake River project drawdowns are not yet complete [see related article above].



Corps Efforts For Salmon Chronicled

A history analyzing the Corps of Engineers' role in researching and constructing facilities designed to protect the anadromous fish affected by Columbia and Snake river dams will come off the presses early this summer.

This history follows the agency's efforts from its early investigations in 1887, when Congress directed the engineers to report on the causes of the declining salmon runs, to today, when the Corps and other involved federal and state agencies and tribes are cooperating to recover sockeye and chinook salmon runs listed under the Endangered Species Act.

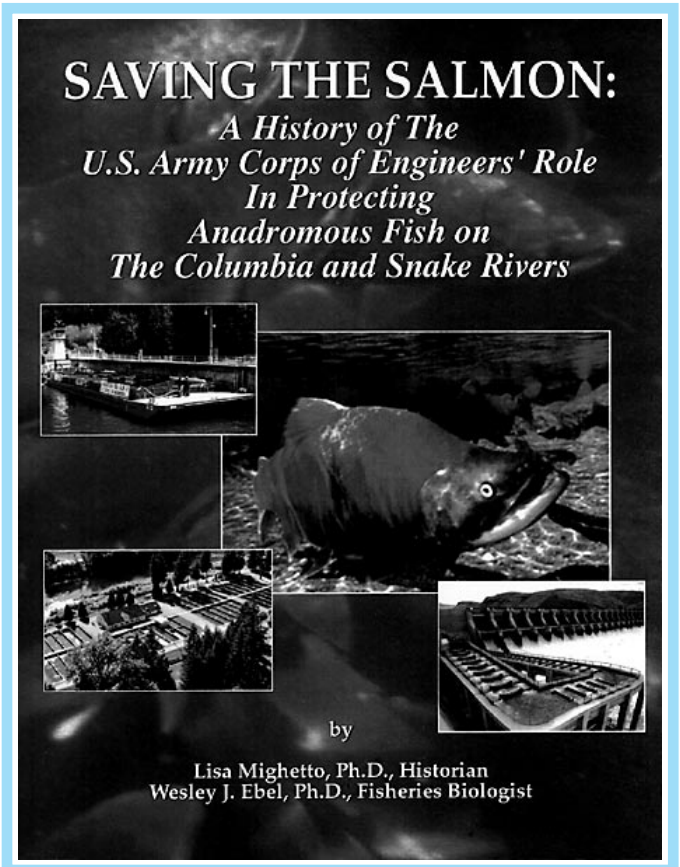
Since the early 1950s, the Corps has devoted more than $60 million to fund fisheries research. In addition, the agency has expended $1.1 billion on physical modifications to its dams and powerhouses to improve fish passage. Still, the system of dams on the Columbia and Snake rivers continues to impede migrating salmon.

Given the seriousness of the issue and the extent of the Corps' involvement over the years, the agency contracted a history examining the development of efforts for the Columbia River salmon and placing these efforts in historical context.

In doing research for the book, its authors, historian Lisa Mighetto, of Historical Research Associates, Inc., Seattle, and Wesley J. Ebel, a respected fisheries biologist and former regional director of the National Marine Fisheries Service, conducted interviews with Corps employees and a variety of biologists from state and federal fisheries agencies, Indian tribes and representatives of environmentalist organizations.

During an interview, Mighetto told Salmon Passage Notes that attitudes toward the Corps varied widely. "Some biologists and historians that we consulted characterized the agency as entirely cooperative, while others denounced it as the 'evil empire'. As historians we don't view events in terms of good guys and bad guys" she said.

Instead, the history outlines the development of attitudes toward fish protection within the Corps, and examines criticism of the agency, as well as opposition to its projects on the Columbia and Snake Rivers. "Our investigation yielded few heroes or villains. In writing the history, we sought neither to exonerate nor to vilify the Corps," the authors wrote in the preface to the history.



What did Mighetto learn when doing research for the book? "Two things surprised me," she said. "One—the extent of the damage to the fisheries that had already occurred late in the 19th Century, and second, how little we know about salmon." And, in fact, a lack of validated scientific information is a recurring theme of the history.

Having done extensive research for the book over a period of two years and having talked to a great many scientists and experts, what did Mighetto think the chances are that the endangered salmon can be saved? "I'm hopeful—but cautious," she said.

In its epilogue, the history concludes "In hindsight, one of the most significant shortcomings of the Corps' efforts to mitigate the impacts of its projects involved research of juvenile fish. Studies of young salmon progressed more gradually than investigations of adults, frustrating scientists who worried about the impacts of large, multipurpose dams on the downstream migrations."

"Deciding between the advantages of water resources development and the preservation of salmon runs will remain a difficult process for the region," the authors contend. "Our time of having it all is over—the choices must be made," the history warns in its epilogue.

A copy of the history, Saving the Salmon: A History of the U. S. Army Corps of Engineers' Role in Protecting Anadromous Fish on the Columbia and Snake Rivers, will be available at no cost to readers of Salmon Passage Notes upon written request. For your copy, mail your request (to include name and full mailing address) to Dr. Bill Willingham, North Pacific Division Historian, U. S. Army Corps of Engineers, P. O. Box 2870, Portland, OR 97208-2870.

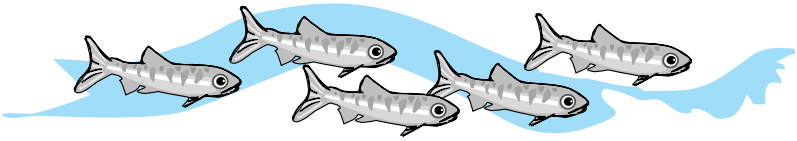
New Pacific Salmon Coordination Office

To increase the Corps' responsiveness to salmon issues in the region a Pacific Salmon Coordination Office was established recently in the Corps' North Pacific Division.

The salmon office will focus on improved coordination with state and federal agencies, tribes, organizations and the general public. The office will also oversee Corps activities to ensure timely completion of actions and studies for salmon restoration under the Endangered Species Act. David Geiger is Chief of the Pacific Salmon Coordination Office.

If you would like to speak to someone in the salmon office, or request a speaker to address your group or class, please contact Adele Merchant at 503-326-3417, Telefax 503-326-3572, Address: CENPD-PS, P.O. Box 2870, Portland OR 97208-2870.

For additional information on topics covered in this newsletter or any information related to the Corps salmon program, please contact Ms. Merchant.



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